

REMARKS

Claims 1-24 are now present in this application, with claims 21-24 being added by the present amendment. Each of claims 1, 17 and 21 are independent.

Example Embodiment of Present Application

An example embodiment of a detector of the present application is shown in Figure 1. The detector includes, among other features, a photosensitive layer (2) including an organic photodiode material. By use of such an organic photodiode material, a photosensitive layer (2) can either be formed as a continuous layer of the photosensitive material or can be assembled from individual restructured pixel points of this material. As such, an elongated photosensitive layer can be created which avoids disadvantages of long signal paths recognized by prior art for example. Further, the photosensitive layer can be designed as a type of organic diode which can produce signals as a function of a radiation of a wavelength different from that of x-rays. For this purpose, a fluorescent layer formed may also be provided which, when excited by x-rays, emits radiation of a wavelength detectable by a photosensitive layer (2).

As shown in Figure 2, x-rays from an x-ray source are eventually detected by photosensitive layer (2). In the rear side of photosensitive layer, facing away from the image source, electrical contacts (7) can be seen. These rear contacts (7) can be used to make contacts as pixel points in photosensitive layer (2) and individual pixel points may be formed by structuring the rear contact (7) so that it corresponds to a pixel arrangement. As such, it makes it easier to form module boards for computed tomography, for example, wherein measurement channels of even more than 10,000 units are used.

Prior Art Rejections

The Examiner has rejected claims 1-2, 10, 12 and 17-18 under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 6,403,964 to Kyyhkynen (the Kyyhkynen '964 patent) in view of Yamazaki (U.S. Patent No. 6,747,290, the Yamazaki '290 patent). This rejection is respectfully traversed.

As noted by the Examiner, the Kyyhkynen '964 patent fails to teach or suggest at least "a material used for the photosensors is an organic photodiode material" as claimed in claim 1. As set forth in Kyyhkynen '964 patent, there is no such teaching or suggestion in the Kyyhkynen '964 patent. Instead, individual image cell detection zones (52) are defined between a continuous electrode (50) and respective detector cell electrodes (54), wherein the background of the invention discusses using semiconductor image devices for high radiation imaging, wherein a plurality of tiles are arranged, each tile arranging an imaging device having x-ray radiation detector cells. The tiles are mounted on a modules discussed in column 3, wherein the tiles are used in the modules in a removable manner, to facilitate the replacement of faulty tiles.

In an attempt to make up for this admitted deficiency of the Kyyhkynen '964 patent, the Examiner attempts to combine the teachings of the Kyyhkynen '964 patent with those of Yamazaki '290 patent. However, unlike the x-ray detector of the Kyyhkynen '964 patent, the Yamazaki '290 patent is directed to an information device having a conventional resistive film for a pen input method, shown in Figure 1 for example. With such a pen input device, a **photodiode having a lamination structure** of an electric charge injection barrier layer, an electric charge generating layer and an electric charged transporting layer are used as shown in Figure 19. Although a compound is discussed as being used as a photoelectric conversion layer (being azoidiodye, a polycyclic compound, a thalocyanine pigment and/or an ionic pigment), it is for a **photodiode having a lamination structure**.

Thus, as is clear from a review of the patents, the **Kyyhkynen '964 patent** is directed to a radiation imaging apparatus intended **to receive high energy radiation such as x-ray radiation**, which includes the structure shown in Figure 2; and the **Yamazaki '290 patent** is directed to a **pen input device** as shown in Figure 1 which includes a photodiode including a **lamination structure**.

Applicants respectfully submit that even assuming *arguendo* that the Yamazaki '290 patent could be combined with the Kyyhkynen' 964 patent, which is not admitted, the combination would still fail to teach or suggest a **photosensor for an x-ray device which includes an organic photodiode material** used for the photosensor, as set forth in claim 1 for example.

Although the Yamazaki '290 patent teaches the use of organic materials for a certain type of photodiode, it clearly **does not teach the use or suggestion of a photodiode for detecting x-ray radiation**, such as that used in the Kyyhkynen '964 patent, **which includes an organic compound**. The photodiode set forth in the Yamazaki '290 patent is clearly a specific type used for a pen input device, and not one which is used for receiving high energy radiation imaging. The photodiode using an organic compound taught in columns 31-32 of the Yamazaki '290 patent, to the contrary, is one which includes a lamination structure of an electric charge injection barrier layer, an electric charge generating layer, and an electric charged transporting layer which is **intended to receive a pen input contact**, and generate electric signals corresponding thereto; which is completely different from the detector which receives x-ray radiation as taught by the Kyyhkynen '964 patent. Accordingly, for at least such reasons, Applicants respectfully submit that even assuming *arguendo* that the references could be combined, the alleged reference combination would still fail to teach or suggest at least "a material used for the photosensors is an organic photodiode material" as claimed in claim 1.

Lack of Motivation to Combine

Applicants further submit that the Examiner has not supplied **evidence** of the necessary motivation needed to lead one ordinarily skilled in the art to combine the teachings of the Kyyhkynen '964 patent and the Yamazaki '290 patent. Accordingly, absent such motivation, a *prima facie* case obviousness under 35 U.S.C. §103 has not been established and the rejection must be withdrawn. Applicants direct the Examiner's attention to two recent cases decided by the Court of Appeals for the Federal Circuit (CAFC), In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed.Cir. 1999) and In re Kotzab, 217 F.3d 1365, 1371, 55 USPQ2d 1313, 1317 (Fed.Cir. 2000). Both of these cases set forth very rigorous requirements for establishing a *prima facie* case of obviousness under 35 U.S.C. §103(a).

To establish obviousness based on a combination of elements disclosed in the prior art, there must be some motivation, suggestion, or teaching of the desirability of making the specific combination that was made by the Applicants. The motivation suggestion or teaching may come explicitly from one of the following:

- (a) the statements in the prior art (patents themselves)
- (b) the knowledge of one of ordinary skill art, or in some cases,
- (c) the nature of the problem to be solved.

See Dembiczak 50 USPQ at 1614 (Fed.Cir. 1999).

In order to establish a *prima facie* case of obviousness under 35 U.S.C. §103(a), the Examiner must provide particular findings as to why the two pieces of prior art are combinable. See Dembiczak 50 USPQ2d at 1617.

Broad conclusory statements standing alone are not "evidence".

In this case, the two prior art references are clearly disparate in their purposes and teachings. The Kyyhkynen '964 patent is directed to a radiation imaging apparatus for detecting high energy radiation such as x-ray imaging (see column 1 of patent for example). To the contrary, although photodiodes are arguably used in both references, the Yamazaki '290 patent

is directed to a pen input device and hence its' photodiodes are used for completely different purposes than those of the Kyyhkynen '964 patent. Although the photodiode of the Yamazaki '290 patent is arguably made from organic compounds, it provides no teaching or suggestion and therefore no evidence of utilizing photodiodes of organic compounds **in a radiation imaging apparatus** such as that of the Kyyhkynen '964 patent. The Examiner has merely utilized the Applicant's invention, in hindsight, to provide such a reference combination.

Further, although the Examiner points to column 32, lines 14-19 of the Yamazaki '290 patent to allegedly indicate why organic compounds may be used instead of inorganic compounds, this reasoning is applied in the Yamazaki '290 patent **in the context of photodiodes for pen input devices**, including, among other features, a lamination structure for receiving contact of a pen type apparatus for example. Thus while some advantages are mentioned, the advantages have nothing to do with leading one of ordinary skill in the art to even look to the teachings of the Yamazaki '290 patent, let alone look to the Yamazaki '290 patent to substitute its' photodiode material for that of the Kyyhkynen '964 patent.

Combining prior art references without even a sense of a suggestion, teaching or motivation, simply takes the inventors' disclosure as a blueprint for piecing together the prior art to defeat patentability – the essence of hindsight. Dembiczak 50 U.S.P.Q. 617. Essentially, the Examiner has only attempted to locate the missing piece of a puzzle, without providing any instructions for combining that piece with the other pieces of the known prior art. The Examiner has merely utilized Applicants claims in hindsight, to combine the reference teachings.

Further, the Examiner, if the rejection is to be maintained, must explain the **reasons why** one of ordinary skill in the art would have been motivated to select the references and combine them to render the claimed invention obvious (In re Fritch, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) the Examiner can satisfy the burden of showing obviousness of the combination "only by showing ***some objective teaching***

in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references"). There is nothing in either the Yamazaki '290 patent or the Kyyhkynen '964 patent which would lead one of ordinary skill in the art to combine any aspect of the photodiode of the pen input device of the Yamazaki '290 patent or the photodiodes for detecting x-ray radiation as set forth in the Kyyhkynen '964 patent. Thus, the Examiner has not accurately provided proper motivation for proper combination of prior art references to render claim 1 obvious.

Accordingly, withdrawal of the Examiner's rejection is respectfully requested.

With regard to claim 17, this claim is similarly directed to an image detector for an x-ray device and includes photosensors which include an organic photodiode material. Accordingly, for at least reasons somewhat similar to those set forth in claim 1, Applicants respectfully submit that such a limitation is not taught or suggested by the Kyyhkynen '964 patent, particularly in combination with the Yamazaki '290 patent, even assuming *arguendo* that they could be combined. Further, for reasons set forth above, Applicants respectfully submit that it would not be obvious for one of ordinary skill in the art to combine the teachings of the Kyyhkynen '964 patent with those of the Yamazaki '290 patent.

New Claims

Applicants have further added new independent claim 21, directed to an image detector for an x-ray device, comprising a plurality of photosensors, each including an organic photosensitive layer to receive an x-ray from an image source. Applicants respectfully submit that the alleged reference combination fails to teach or suggest at least such an **organic photosensitive layer to receive an x-ray from an image source**, as set forth in independent claim 21. Further, Applicants respectfully submit that it would not be obvious to combine the teachings of the Kyyhkynen '964 patent with those of the Yamazaki '290 patent.

Still further, Applicants have added new claims 22-24 in connection with the present application. In these new claims, it is clarified that the photosensors of each of claims 1, 17 and 21 include a **fluorescent layer** which, when excited by an x-ray, **emits radiation detectable by using the photodiode material of an organic photosensitive layer**. No such fluorescent layer is taught or suggested by any of the references, either taken singly or in combination.

Additional Rejections

The Examiner has rejected 3-9, 11, 14-16 and 19-20 under 35 U.S.C. §103 as being unpatentable over the Kyyhkynen '964 patent and the Yamazaki '290 patent, and further in view of Chappo (U.S. Patent No. 6,510,195, the Chappo '195 patent). This rejection is respectfully traversed for at least the reasons previously set forth regarding the corresponding independent claims in that, even assuming *arguendo* that the Chappo '195 patent could be combined with either one or both of the Kyyhkynen '964 patent and Yamazaki '290 patent (which Applicants do not admit), the Chappo '195 patent would still fail to make up for at least the previous mentioned deficiencies as previously set forth regarding independent claims 1 and 17. Accordingly, withdrawal of the rejection is respectfully requested.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1-24 in connection with the present application is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley at the telephone number of the undersigned below.

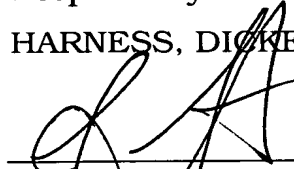
If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37

C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By



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